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DEPARTMENT OF REGISTRATION AND EDUCATION

MINERAL PRODUCTION IN ILLINOIS IN 1960

W. L. Busch

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ABSTRACT

The value of minerals produced in Illinois in 1960 totaled almost 616 million dollars. Revised figures for 1959 totaled 606.3 million dollars. The minerals include coal, oil and associated products, stone, sands and gravel, fluorspar, metals, and such related items as clay products, cement, and lime. The amount and value of minerals produced in Illinois during 1960 and 1959 are summarized in tables, maps, and charts in this report.

INTRODUCTION

Illinois is a wealthy state—wealthy in agriculture, commerce, manufacturing, and the production of mineral materials. The wealth of the state is due to its central location, which fosters commerce and the economical assembling of materials for manufacturing, and to its fertile soil and great stores of mineral resources, including coal, oil and gas, fluorspar, zinc and lead, stone, clays, silica sand, and such homely products as common sand and gravel.

The material well-being and industrial stability of Illinois is founded in the remote past when vast beds of coal were formed; extensive layers of limestone, dolomite, clay and shale, and sandstone were laid down; deposits of fluorspar, zinc, and lead filled cracks and crevices; and oil and gas accumulated in porous rocks. The great ice sheets that covered most of Illinois thousands of years ago left behind a blanket of unconsolidated rock material from which developed the state's rich soils. Glacial debris also filled preglacial stream valleys with sand and gravel that now holds abundant resources of ground water. New watersheds and stream patterns were formed, and some of the new stream valleys became our present lines of travel and transport. The Great Lakes, as finally formed, and broad navigable rivers put Illinois into ready communication with Canada, the Atlantic, and the Gulf of Mexico.

Today, Illinois is essentially a prairie and it presents few physiographic contrasts. The mean elevation is about 600 feet above sea level, and the total relief of the state is 973 feet. The highest point, Charles Mound in the northwest corner of the state, is 1,241 feet above sea level, and the lowest point, the junction of the Ohio and Mississippi Rivers, is 268 feet above sea level.

The fact that Illinois, long known as the Prairie State, has been well endowed with useful rocks and mineral materials often is overlooked. Illinois ranks eighth among states of the nation in the production of mineral products and has produced more than 600 million dollars worth of such materials annually since 1956.

TABLE 1 - SUMMARY OF ILLINOIS MINERAL PRODUCTION, 1959-1960[a]

Material	Unit	1959*,[b] Quantity	1959*,[b] Value at plants Total	1959*,[b] Value at plants Av.	1960[b] Quantity	1960[b] Value at plants Total	1960[b] Value at plants Av.
Coal - bituminous	tons	45,374,626	$184,220,982	$ 4.06	45,820,632	$183,740,734	$ 4.01
Crude oil	bbls.	76,727,000	230,181,000	3.00	77,341,000	230,338,000	2.98
Limestone and dolomite	tons	31,909,142	41,746,465	1.31	37,032,017	50,978,358	1.38
Cement	bbls.	9,924,486	31,793,942	3.20	9,139,300	30,732,000	3.36
Clay products	-	-	58,343,921	-	-	56,621,065	-
Sand	tons	10,977,478	9,895,321	0.90	11,988,786	10,633,054	0.89
Gravel	tons	14,075,667	12,829,862	0.91	14,615,153	13,694,589	0.94
Special sands	-	-	10,396,376	-	-	9,818,110	-
Fluorspar	tons	112,469	5,908,307	52.53	134,529	6,935,511	51.55
Zinc	tons	26,815	6,167,450	230.00	29,550	7,623,900	258.00
Lead	tons	2,570	591,100	230.00	3,000	702,000	234.00
Other minerals[c]	-	-	14,225,274	-	-	13,982,679	-
Annual mineral production			$606,300,000			$615,800,000	

* Revised figures.
a Table based on figures from the U. S. Bureau of Mines, the Illinois State Department of Mines and Minerals, and the Illinois State Geological Survey.
b Subject to revision.
c Includes natural gas, natural gasoline, liquefied petroleum gases, and lime.

That mineral industries of Illinois have responded well to the needs of a growing population and a growing economy during the last three decades is illustrated by the fact that in 1930 the mineral product of Illinois amounted to less than 150 million dollars. The state's ever increasing demand for energy and power, improved streets and highways, additional housing, stores and other commercial buildings, schools, recreational facilities, churches, hospitals, and other community structures has been substantially met by Illinois fuels, building materials, and other mineral products.

SUMMARY OF 1960 MINERAL PRODUCTION

During 1960 Illinois produced a total of 615.8 million dollars worth of mineral products—a new all-time record (table 1). The previous Illinois record had been established in 1956 when mineral products reached the 613.4 million-dollar mark (table 2). The new record exceeds the 1959 total by 9.5 million dollars, with some minerals accounting for the increase and others remaining at or near 1959 levels.

The value of fuels produced in Illinois in 1960 was about 68 percent of the total value of all minerals (fig. 1). However, the production of these fuels—coal, crude oil, and associated products—remained very close to 1959 levels.

The second largest group of Illinois minerals in terms of total value are stone products, which include crushed stone, cement, and lime. As a group these commodities contributed 15 percent of the 1960 total value (fig. 2). The tonnage and value of crushed stone reported produced during 1960 showed significant increases over the amounts reported for 1959.

Although production of clay products in Illinois declined slightly during 1960, the 56.6 million dollars contributed by this industry was 9 percent of the state's total value of all mineral products. Table 3 gives the percentage of total mineral value contributed by the clay and other mineral industries from 1940 through 1959. Clay products include face brick and common brick, structural tile, drain and sewer tile, refractories, pottery and whiteware.

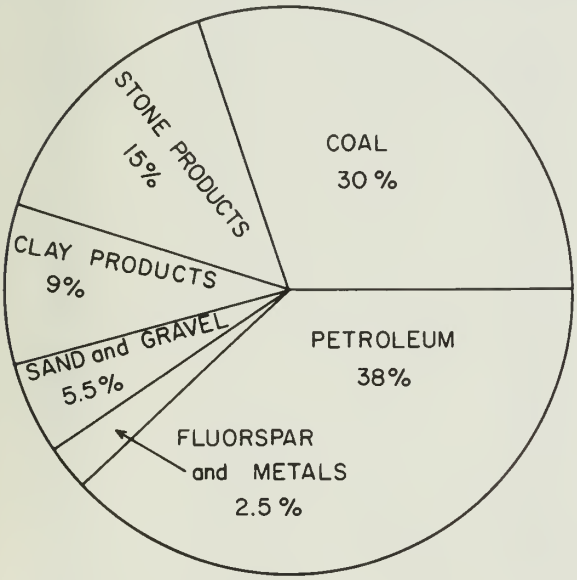

Fig. 1 - Value of Illinois mineral production in 1960 was 615.8 million dollars. Percentage contributions by the various segments of the Illinois mineral industry are shown above.

In 1960 sand and gravel production increased slightly over 1959 levels and furnished 5.5 percent of the Illinois total mineral products value. This group of minerals includes common sand and gravel, silica sand, and natural bonded molding sand.

Fluorspar, zinc, and lead, the other minerals produced in Illinois, showed a gain in production for the year. As a group these three minerals had a value of over 15 million dollars in 1960, 2.5 percent of the state's total value. Table 4 indicates the average price per ton for these and other minerals produced in Illinois from 1940 through 1959.

TABLE 2 - VALUE OF ILLINOIS MINERAL PRODUCTION, 1916-1960[a]
(thousands of dollars)

Year	Mineral production	Year	Mineral production	Year	Mineral production
1916	$146,360	1931	$108,066	1946	$379,673
1917	234,736	1932	71,693	1947	458,734
1918	271,244	1933	74,837	1948	567,624
1919	213,701	1934	89,212	1949	487,808
1920	373,926	1935	96,484	1950	539,236
1921	254,019	1936	117,916	1951	542,031
1922	244,618	1937	133,437	1952	500,820
1923	282,761	1938	130,155	1953	501,926
1924	235,796	1939	215,157	1954	519,242
1925	231,658	1940	287,327	1955	570,653
1926	237,242	1941	333,225	1956	613,364
1927	180,394	1942	341,835	1957	612,755
1928	188,099	1943	337,912	1958	611,625
1929	182,791	1944	342,832	1959	606,300*
1930	148,311	1945	344,267	1960	615,800[b]

* Revised figure.
a Table based on figures from the U. S. Geological Survey, U. S. Bureau of Mines, the Illinois State Department of Mines and Minerals, and the Illinois State Geological Survey.
b Subject to revision.

TABLE 3 - PERCENTAGE OF TOTAL VALUE CONTRIBUTED BY VARIOUS SEGMENTS OF THE ILLINOIS MINERAL INDUSTRY, 1940-1959[a]

Year	Coal	Petroleum products	Stone products	Clay products	Sand and gravel	Fluorspar and metals	Total percent
1940	30.2	55.0	5.7	5.7	2.3	1.1	100
1941	30.1	52.9	6.5	6.1	3.0	1.4	100
1942	36.7	44.2	7.5	5.9	3.8	1.9	100
1943	46.6	36.3	6.0	5.4	3.4	2.3	100
1944	50.4	34.2	5.4	4.7	3.0	2.3	100
1945	49.9	33.3	6.2	5.7	2.7	2.2	100
1946	43.9	33.2	8.5	8.7	3.5	2.2	100
1947	46.9	32.9	7.7	7.4	3.1	2.0	100
1948	45.2	34.5	7.5	7.9	3.0	1.9	100
1949	39.4	38.7	8.6	7.8	3.4	2.1	100
1950	43.0	33.6	8.2	9.0	3.5	2.7	100
1951	41.2	32.6	9.2	9.9	3.7	3.4	100
1952	37.4	35.2	11.3	8.7	4.0	3.4	100
1953	36.2	36.7	11.4	9.2	4.0	2.5	100
1954	30.7	41.6	11.8	9.1	4.9	1.9	100
1955	29.3	42.7	11.3	9.6	4.5	2.6	100
1956	30.0	40.6	12.2	9.6	5.0	2.6	100
1957	30.5	40.1	12.3	9.9	4.8	2.4	100
1958	28.7	40.5	13.7	9.0	5.8	2.3	100
1959	30.4	38.7	13.7	9.6	5.5	2.1	100

a Source: Illinois State Geological Survey Mineral Production Reports.

TABLE 4 - AVERAGE PRICES OF ILLINOIS MINERAL PRODUCTS, 1940-1959[a,b]

Year	Coal (ton)	Crude oil (bbl.)	Crushed stone (ton)	Cement (bbl.)	Lime (ton)	Silica sand (ton)
1940	$1.69	$1.06	$ .82	$1.47	$ 7.15	$1.30
1941	1.81	1.30	.91	1.46	6.99	1.37
1942	1.91	1.36	.93	1.45	7.21	1.31
1943	2.13	1.37	.93	1.55	7.58	1.38
1944	2.23	1.39	1.00	1.55	7.78	1.39
1945	2.34	1.40	1.02	1.70	7.75	1.45
1946	2.61	1.59	1.08	1.76	8.45	1.51
1947	3.15	2.10	1.17	1.88	9.15	1.72
1948	3.88	2.77	1.26	2.04	10.60	1.91
1949	4.04	2.77	1.23	2.11	11.58	2.08
1950	4.05	2.77	1.21	2.19	12.15	2.13
1951	4.07	2.77	1.20	2.40	12.70	2.28
1952	4.10	2.77	1.27	2.40	12.84	2.30
1953	3.95	2.91	1.24	2.54	13.44	2.38
1954	3.82	3.00	1.27	2.57	13.95	3.07
1955	3.66	2.93	1.22	2.66	14.62	2.84
1956	3.84	2.95	1.36	2.93	15.25	3.05
1957	4.00	3.13	1.38	3.07	16.57	3.11
1958	4.02	3.00	1.32	3.21	16.69	3.06
1959	4.06	3.00	1.31	3.20	16.30	2.91

Year	Sand (ton)	Gravel (ton)	Fluorspar (ton)	Zinc (ton)	Lead (ton)	Silver (ounces)
1940	$ .41	$ .44	$22.10	$126.00	$100.00	$ .711
1941	.45	.46	22.85	150.00	114.00	.711
1942	.48	.52	26.59	186.00	134.00	.711
1943	.50	.49	31.66	216.00	150.00	.711
1944	.49	.49	33.79	228.00	160.00	.711
1945	.49	.49	34.06	230.00	172.00	.711
1946	.59	.57	35.55	244.00	218.00	.808
1947	.69	.58	36.78	242.00	290.00	.905
1948	.72	.65	36.64	266.00	358.00	.905
1949	.74	.65	38.23	248.00	316.00	.905
1950	.74	.68	39.52	278.00	266.00	.905
1951	.74	.75	45.49	364.00	346.00	.905
1952	.72	.71	50.35	332.00	322.00	.905
1953	.74	.76	52.46	218.00	266.00	.905
1954	.73	.78	55.54	216.00	274.00	.905
1955	.77	.85	47.12	246.00	298.00	.905
1956	.75	.83	47.51	274.00	314.00	.905
1957	.77	.86	51.94	232.00	286.00	.905
1958	.90	.95	52.15	204.00	234.00	.905
1959	.90	.91	52.53	230.00	230.00	.905

a Source: Illinois State Geological Survey Mineral Production Reports.
b Subject to revision.

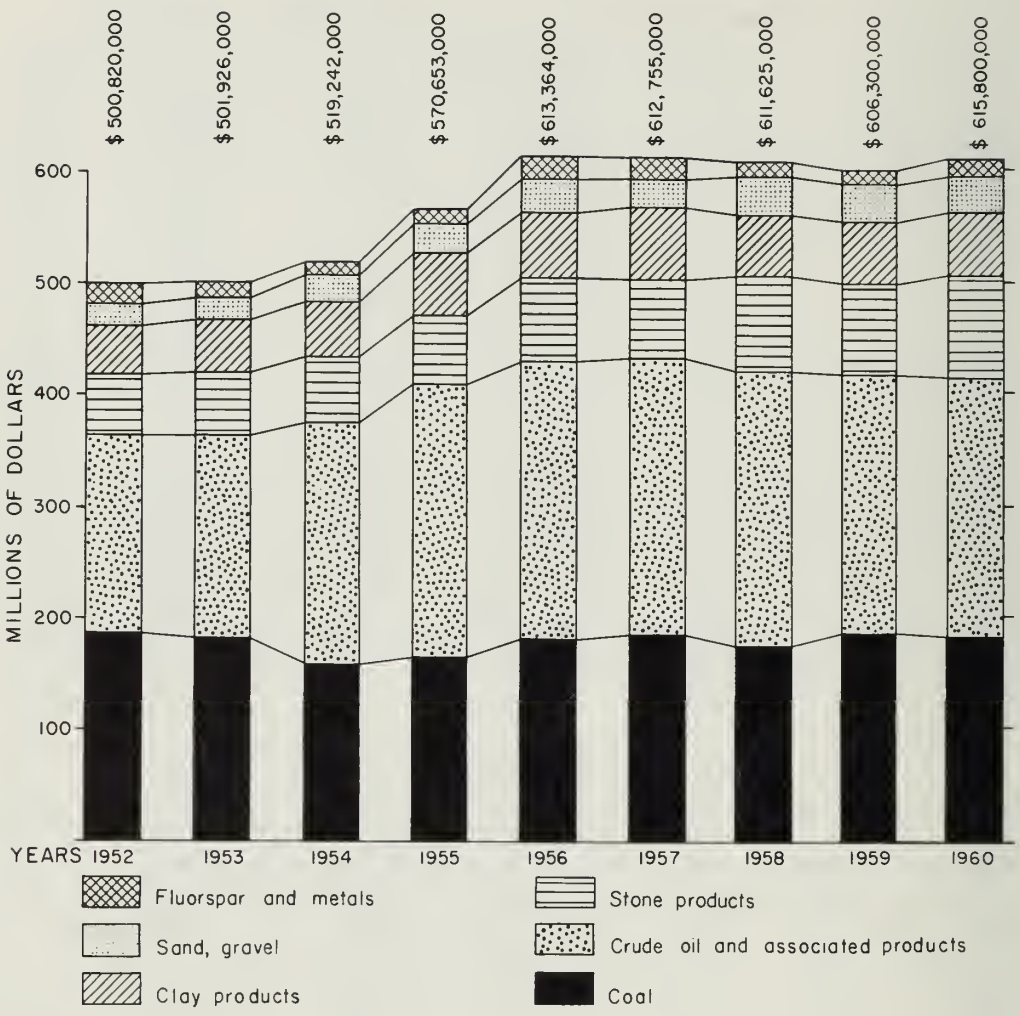

Fig. 2 - Value of Illinois mineral production compared for 1952 to 1960.

COAL INDUSTRY

About 300 years ago the first recorded discovery of coal in the United States was made in Illinois near the present city of Ottawa. Since that time some 3.6 billion tons of coal are known to have been extracted from Illinois mines. However, the calculated reserves of bituminous coal in Illinois, amounting to over 136 billion tons, exceed those of any other state.

For many years Illinois has ranked as the fourth largest coal producing state in the nation (table 5), outranked in annual tonnage by only West Virginia, Kentucky, and Pennsylvania (fig. 3). During 1960 Illinois produced almost 46 million tons of coal, more than 11 percent of all coal produced in the United States.

The value of coal produced in Illinois during 1960 amounted to a little less than 184 million dollars. Although slightly more coal was produced in 1960 than

TABLE 5 - NATIONAL PRODUCTION OF BITUMINOUS COAL, 1957-1960[a]
(thousands of tons)

State	1957	1958	1959*	1960	Percent of 1960 total
West Virginia	156,842	119,468	119,692	118,944	28.6
Pennsylvania	85,365	67,771	65,347	65,425	15.8
Kentucky	74,667	66,312	62,810	66,847	16.1
Illinois	46,993	43,912	45,466	45,977	11.1
Ohio	36,862	32,028	35,112	33,957	8.2
Virginia	29,506	26,826	29,769	27,838	6.7
Indiana	15,841	15,022	14,804	15,538	3.7
Alabama	13,260	11,182	11,947	13,011	3.1
Tennessee	7,955	6,785	5,913	5,931	1.4
Utah	6,858	5,328	4,545	4,955	1.2
Total	474,149	394,634	395,405	398,423	95.9
All other states	18,555	15,812	16,623	17,089	4.1
Grand total	492,704	410,446	412,028	415,512	100.0

* Revised figures.
a Source: U. S. Bureau of Mines.

in 1959, the total value was somewhat less because of a slight drop in the average value per ton. Nevertheless, coal contributed 30 percent to the state's total value of all mineral products, and because of substantial reserves and nearby markets a long future is assured for the Illinois coal industry.

Production

The record of Illinois coal production for 1960 is shown in tables 6 and 7. Table 6 summarizes the 1960 production in terms of tons of coal produced, type of mine (strip or underground), number of mines, and the approximate value of the product for each producing county. Of the 38 counties producing coal, 13 produced more than one million tons each for a combined total of 90 percent of the state's 1960 output. Strip mining was important in more than half of the producing counties in 1960 and accounted for almost 50 percent of the total tonnage.

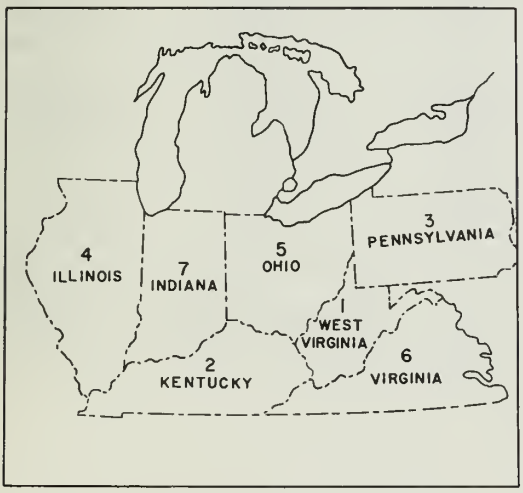

Fig. 3 - States that produced 90 percent of the nation's bituminous coal in 1960.

The production of coal by counties since 1882, when mining records were begun, is shown in table 7. Of the 70 counties that have produced coal during this 79-year period, 11 have accounted for three-fourths of the state's entire output, each producing more than 100 million tons of coal. Table 7 also records

TABLE 6 - ILLINOIS COAL PRODUCTION BY COUNTIES IN 1960[a]

County	Number of mines	Tons mined		Total tons	Total value[b]
		Underground	Strip		
Adams	1	-	37,620	37,620	$ 150,856
Brown	1	-	673	673	2,699
Bureau	1	-	374,123	374,123	1,500,233
Christian	1	4,117,552	-	4,117,552	16,511,384
Clinton	1	36,297	-	36,297	145,551
Crawford	1	-	395	395	1,584
Douglas	1	505,589	-	505,589	2,027,412
Franklin	6	4,128,674	-	4,128,674	16,555,983
Fulton	24	26,624	5,211,640	5,238,264	21,005,438
Gallatin	3	65,094	19,007	84,101	337,245
Greene	1	-	7,062	7,062	28,319
Henry	1	73,295	-	73,295	293,913
Jackson	5	638,513	676,494	1,315,007	5,273,178
Jefferson	2	2,936,492	23,602	2,960,094	11,869,977
Kankakee	1	-	688,899	688,899[c]	2,762,485
Knox	4	-	2,239,285	2,239,285	8,979,533
LaSalle	1	-	885	885	3,549
Livingston	1	-	143	143	573
Logan	1	7,730	-	7,730	30,997
Macoupin	1	358,171	-	358,171	1,436,266
Madison	2	667,868	-	667,868	2,678,151
Marion	1	28,838	-	28,838	115,640
Menard	1	12,970	-	12,970	52,010
Mercer	2	24,250	2,981	27,231	109,196
Montgomery	1	1,931,657	-	1,931,657	7,745,945
Peoria	10	20,088	518,960	539,048	2,161,582
Perry	3	2,480	2,826,912	2,829,392	11,345,862
Randolph	3	779,618	937,159	1,716,777	6,884,276
St. Clair	9	1,523,607	3,321,250	4,844,857	19,427,876
Saline	11	1,071,068	1,726,103	2,797,171	11,216,656
Sangamon	2	98,515	-	98,515	395,045
Schuyler	2	6,288	583,302	589,590	2,364,256
Stark	1	-	170,085	170,085	682,041
Vermilion	10	42,396	1,057,868	1,100,264	4,412,059
Wabash	1	-	1,133	1,133	4,543
Washington	2	32,513	-	32,513	130,377
Williamson	23	3,976,918	2,281,946	6,258,864	25,098,044
Total	142	23,113,105	22,707,527	45,820,632	$183,740,734

a Source: Production figures, Illinois State Department of Mines and Minerals.
b Average value for Illinois coal f.o.b. mine, estimated at $4.01 per ton, 1960.
c Includes 368,555 tons mined in Will County.

TABLE 7 - COAL PRODUCTION BY ILLINOIS COUNTIES, 1882-1960[a]

County	Total production (tons)	Total years active	Last year active
Adams	120,893	17	1960
Bond	7,355,569	57	1942
Brown	63,140	37	1960
Bureau	52,645,088	76	1960
Calhoun	96,247	27	1912
Cass	212,477	53	1941
Christian	239,172,510	76	1960
Clark	4,482	2	1955
Clinton	38,656,325	79	1960
Coles	198,932	6	1888
Crawford	45,294	15	1960
Douglas	3,748,944	15	1960
Edgar	915,698	41	1952
Effingham	796	1	1890
Franklin	494,687,971	62	1960
Fulton	205,488,610	79	1960
Gallatin	5,705,874	76	1960
Greene	666,315	77	1960
Grundy	40,872,430	77	1958
Hamilton	22,097	16	1905
Hancock	771,281	72	1958
Hardin	40	1	1890
Henry	22,532,368	79	1960
Jackson	89,392,368	79	1960
Jasper	23,739	11	1939
Jefferson	28,060,522	57	1960
Jersey	120,350	59	1951
Johnson	244,004	52	1956
Kankakee	8,382,573	41	1960
Knox	39,396,261	79	1960
LaSalle	65,547,638	79	1960
Livingston	10,111,232	79	1960
Logan	14,368,035	76	1960
Macon	11,000,468	65	1947
Macoupin	263,159,512	79	1960
McDonough	2,634,903	69	1951
McLean	5,544,139	47	1928
Madison	162,397,406	79	1960
Marion	39,200,658	79	1960
Marshall	12,516,141	70	1951
Menard	13,427,886	79	1960
Mercer	15,078,688	73	1960
Monroe	8,284	13	1941
Montgomery	93,075,459	79	1960
Morgan	190,787	64	1951
Moultrie	2,032,236	16	1924
Peoria	68,153,767	79	1960
Perry	179,850,584	79	1960
Pike	5,081	8	1942
Pope	1,562	11	1938
Putnam	10,071,893	29	1938
Randolph	78,531,252	79	1960
Richland	154	1	1890
Rock Island	3,846,169	67	1948
St. Clair	249,630,238	79	1960
Saline	203,116,688	79	1960
Sangamon	233,085,305	79	1960
Schuyler	4,823,046	78	1960
Scott	612,476	61	1942
Shelby	4,119,763	67	1950
Stark	1,397,365	70	1960
Tazewell	17,633,802	75	1956
Vermilion	156,339,522	79	1960
Wabash	189,570	32	1960
Warren	685,466	73	1954
Washington	17,923,903	79	1960
White	1,676,741	36	1940
Will	38,129,111	79	1960
Williamson	336,764,376	79	1960
Woodford	7,810,160	70	1951
Total (1882-1960). . . .			3,604,294,664
Estimated production (1833-1881). . . .			73,386,123
Total production (1833-1960). . . .			3,677,680,787

a Source: Illinois State Department of Mines and Minerals.

the total number of years that each county has produced coal since 1882 and the last year it produced coal.

Illinois has 10 of the 50 largest bituminous coal mines in the United States, ranked by 1960 tonnage produced. One of the 10 was the second largest producer in the nation and had produced over four million tons of coal. The other nine mines ranked number 4, 10, 15, 17, 34, 42, 43, 49, and 50. Together the ten mines produced 20.1 million tons of coal, 21 percent of the total coal produced by the 50 largest mines in the United States, and about 44 percent of the total coal produced in Illinois during 1960. The Illinois mine that ranked last in the list of 50 mines produced more than 1.3 million tons of coal.

The 38 counties in Illinois that produced coal in 1960 are shown in figure 4, with the intensity of mining activity illustrated by the degree of shading. The map (fig. 4) also indicates how close the large metropolitan and manufacturing centers of the state are to unlimited supplies of coal. Chicago, the largest urban and

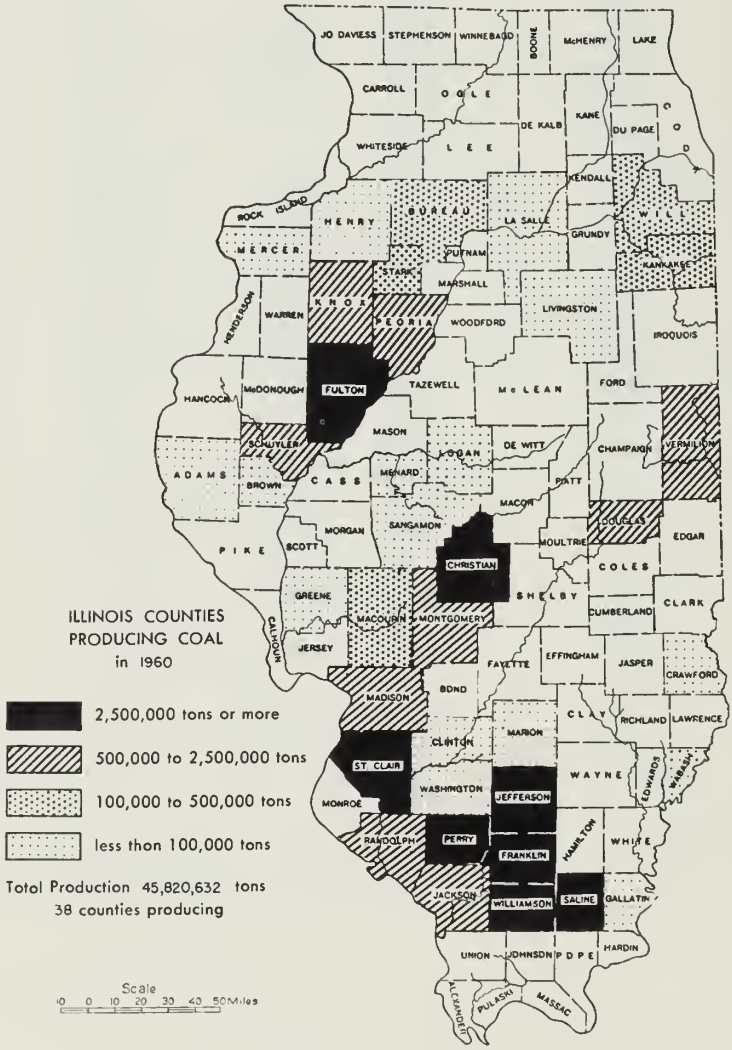

Fig. 4 - Illinois coal production by counties in 1960.

manufacturing center in the state, is on a direct railroad line from the southern Illinois coal fields. Other important manufacturing cities of the state all have ample supplies of coal nearby or readily available by rail or water shipment from Illinois coal fields.

PETROLEUM INDUSTRY

Oil production in the United States during 1960 totaled more than 2.5 billion barrels, the tenth consecutive year in which more than 2 billion barrels of crude oil were produced. Ten states, eight of them lying west of the Mississippi River, accounted for over 91 percent of the 1960 domestic production (table 8). Texas held the dominant position with about 36 percent of the nation's output. Louisiana, California, and Oklahoma, the three next largest producers, contributed a combined total of about 35 percent of the nation's production. The other six main oil producing states—Wyoming, Kansas, New Mexico, Illinois, Mississippi, and Colorado—are comparatively small producers, although the production of some of them (table 8) has been increasing in recent years.

TABLE 8 - NATIONAL PRODUCTION OF CRUDE OIL, 1957-1960[a]
(thousands of barrels)

State	1957	1958	1959*	1960[b]	Percent of 1960 total
Texas	1,073,867	940,166	971,978	933,632	36.2
Louisiana	329,896	313,891	362,666	394,360	15.3
California	339,646	313,672	308,946	304,356	11.8
Oklahoma	214,661	200,699	198,090	192,288	7.5
Wyoming	109,584	115,572	126,050	135,521	5.3
Kansas	123,614	119,942	119,543	113,455	4.4
New Mexico	94,759	98,515	105,692	107,940	4.2
Illinois	77,083	80,275	76,727	78,840	3.1
Mississippi	38,922	39,512	49,620	51,819	2.0
Colorado	54,982	48,736	46,440	47,165	1.8
Total	2,457,014	2,270,980	2,365,752	2,359,376	91.6
All other states	159,887	178,007	208,838	215,557	8.4
Grand total	2,616,901	2,448,987	2,574,590	2,574,933	100.0

* Revised figures.
a Source: U. S. Bureau of Mines.
b Preliminary figures.

The oil and gas reserves of each state are estimated by the industry every year. Only the reserves that have been proved and can be recovered under existing economic and operating conditions (table 9) are included in the estimates. The figures do not imply that all the oil or gas in a state or in the nation has been discovered, but they do represent a known amount of oil or gas (table 10) on a given

TABLE 9 - ESTIMATES OF PROVED OIL RESERVES IN ILLINOIS AND OTHER STATES, 1958-1961[a]
(millions of barrels)

State[b]	1958	1959	1960	1961	Approximate change from 1960
Illinois	655	608	594	556	- 38
Indiana	67	71	74	66	- 8
Kansas	947	922	917	884	- 33
Kentucky	138	126	136	129	- 7
Louisiana	3,857	4,044	4,660	4,785	+125
New Mexico	832	894	1,026	1,084	+ 58
Oklahoma	1,942	1,898	1,865	1,791	- 74
Texas	14,555	14,322	14,860	14,759	-101
Wyoming	1,420	1,409	1,403	1,427	+ 24
All other states	5,887	6,242	6,184	6,132	- 52
United States	30,300	30,536	31,719	31,613	-106

a Source: American Petroleum Institute.
b Figures as of January 1, each year.

date. The nation's oil reserves, estimated at the beginning of 1961, had declined slightly from the high reserves estimated at the start of 1960. Although the decline was small, amounting to some 106 million barrels, the reserve figures will be worth noting each year in the light of this country's continued and growing demand for liquid fuels.

TABLE 10 - ESTIMATES OF NATURAL GAS RESERVES IN ILLINOIS AND OTHER STATES, 1958-1961[a]
(billions of cubic feet)

State[b]	1958	1959	1960	1961	Approximate change from 1960
Illinois	166	170	175	173	- 2
Indiana	31	31	35	34	- 1
Kansas	19,296	20,234	19,981	19,609	- 372
Kentucky	1,225	1,215	1,159	1,144	- 15
Louisiana	51,436	55,112	59,854	63,386	+3,532
New Mexico	22,258	21,180	17,913	15,604	-2,309
Oklahoma	14,259	15,207	16,651	17,299	+ 648
Texas	113,084	115,046	120,476	119,480	- 996
Wyoming	3,457	3,650	3,847	3,935	+ 88
All other states	21,357	22,297	22,506	23,038	+ 532
United States	246,569	254,142	262,597	263,702	+1,105

a Source: American Gas Association.
b Figures as of January 1, each year.

Illinois Oil Production

Illinois oil production for 1960 was estimated to be 77,341,000 barrels, a slight increase over the 76,727,000 barrels produced in 1959 (fig. 5). Peak production for Illinois oil was attained in 1940 when 147,647,000 barrels was produced, after which production gradually declined to a low of just over 59 million barrels in 1953. In 1954, through a combination of increased drilling and oil well treatment techniques, such as fracturing and waterflooding, the downward trend was reversed and production increased to the 1956 postwar high of 82.3 million barrels. Although drilling has declined in recent years, production has remained fairly level because secondary methods of oil recovery in Illinois have been contributing increasing amounts of the total oil produced. In 1960 about two-thirds of Illinois oil was produced by such processes. The average value for Illinois oil in 1960 was estimated at $2.98 per barrel for a total of about 230.3 million dollars.

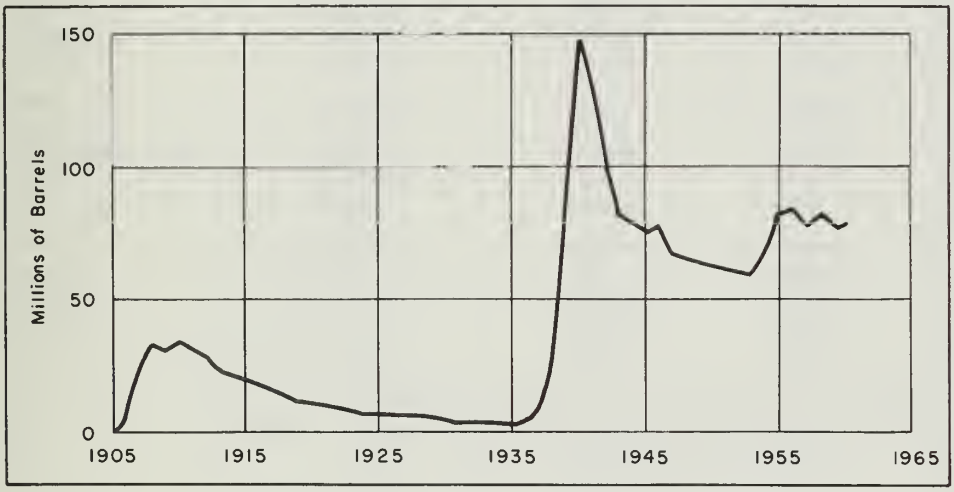

Fig. 5 - Illinois production of crude oil, 1905-1960.

For many years the value of coal mined in Illinois exceeded that of any other mineral produced within the state; however, since 1954 the value of crude oil has been the largest single segment of the state's total annual mineral value. For 1960, Illinois crude oil, together with its associated products of gas and liquefied petroleum gases, accounted for about 38 percent of the state total.

The first major oil boom in Illinois occurred from 1905 to about 1912. Peak production was reached in 1908 when some 33.6 million barrels of oil was produced.

In 1935 an intensive search for new oil fields began in downstate Illinois. After months of scientific exploration the first test wells were drilled early in 1937, and their successful completion sparked a drilling campaign that discovered many new pools in the south-central part of the state. The second major period of oil production was from 1937 to 1941, the production for 1940 being the all-time high. Table 11 summarizes well completions and production since 1936.

TABLE 11 - ILLINOIS WELL COMPLETIONS AND PRODUCTION, 1936-1960

Year	Completions[a]	Producing wells		Production[b,c] (thousands of barrels)
		Number	Percent of completions	
1936	93	52	56.0	4,445
1937	449	292	65.0	7,426
1938	2,536	2,010	79.0	24,075
1939	3,617	2,970	82.0	94,912
1940	3,755	3,080	82.0	147,647
1941	3,807	2,925	77.0	134,138
1942	2,017	1,179	58.0	106,590
1943	1,791	1,090	61.0	82,256
1944	1,991	1,229	62.0	77,413
1945	1,763	1,094	62.0	75,210
1946	2,362	1,387	59.0	75,297
1947	2,046	1,102	54.0	66,459
1948	2,489	1,316	53.0	64,808
1949	2,741	1,447	53.0	64,501
1950	2,894	1,328	46.0	62,028
1951	2,383	947	40.0	60,244
1952	2,077	854	41.0	60,071
1953	2,161	1,161	54.0	59,025
1954	3,254	1,896	58.0	66,940
1955	3,885	2,164	56.0	81,131
1956	3,640	1,742	48.0	82,314
1957	2,585	1,114	43.0	76,649
1958	2,291	1,066	46.5	80,779
1959	2,032	1,034	51.0	76,727
1960	1,922	819	42.6	77,341

a Includes only oil and gas producers and dry holes.
b Based on information furnished by oil and pipeline companies.
c From U. S. Bureau of Mines through 1950.

Table 12 gives, by county, the estimated amount and value of oil produced in Illinois in 1960 and each county's percentage of the state total. The map in figure 6 shows the 42 counties in Illinois that produced oil in 1960 and indicates the major oil producing counties. For several years after the new oil fields were discovered in southern Illinois, 25 to 35 new pools were found annually. In recent years the number of new pools has been declining; in 1960 only 10 new oil pools and 1 gas pool were found. As productive areas are drilled up, discovery wells are more likely to be extensions of pools than discovery wells of new pools. The map (fig. 7) which outlines most of southern Illinois and indicates the extent of the Illinois oil basin, shows the relative sizes of the various oil fields together with the new fields discovered in 1960.

TABLE 12 - ESTIMATED OIL PRODUCTION BY ILLINOIS COUNTIES, 1960[a]

County	Production		Value[b] in thousands of dollars
	Thousands of barrels	Percent of state total	
Adams	48	0.06	$ 143
Bond	311	0.40	926
Brown	76	0.10	226
Christian	1,804	2.33	5,372
Clark-Cumberland	1,543	2.00	4,596
Clay	3,200	4.14	9,531
Clinton	2,156	2.79	6,421
Coles	457	0.59	1,360
Crawford	3,773	4.88	11,237
Douglas	237	0.31	706
Edgar	78	0.10	232
Edwards	1,238	1.60	3,687
Effingham	522	0.67	1,554
Fayette	13,051	16.87	38,867
Franklin	2,030	2.62	6,046
Gallatin	1,643	2.12	4,894
Hamilton	3,044	3.93	9,066
Hancock-McDonough	54	0.07	161
Jasper	1,382	1.79	4,116
Jefferson	2,341	3.03	6,973
Lawrence	7,863	10.17	23,416
Macon	33	0.04	99
Macoupin	12	0.02	36
Madison	322	0.42	959
Marion	8,810	11.39	26,238
Montgomery	2	-	6
Moultrie	3	-	9
Perry	52	0.07	155
Randolph	172	0.22	512
Richland	2,301	2.98	6,853
St. Clair	8	0.01	24
Saline	585	0.76	1,742
Sangamon	136	0.18	405
Schuyler	1	-	3
Shelby	67	0.09	200
Wabash	2,586	3.34	7,701
Washington	671	0.87	1,998
Wayne	6,359	8.22	18,940
White	8,308	10.74	24,743
Williamson	62	0.08	185
Total	77,341	100.00	$230,338

a Subject to revision.
b Average price estimated at approximately $2.98 per barrel.

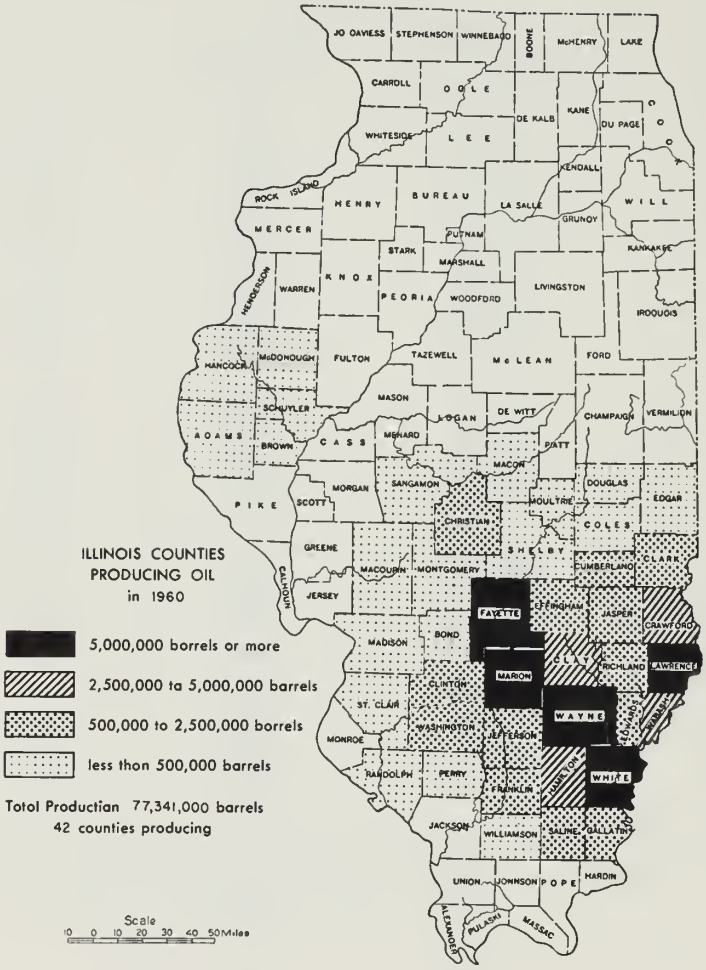

Fig. 6 - Illinois oil production by counties in 1960.

STONE, SAND, AND GRAVEL

During 1960, 37 million tons of crushed and broken stone was produced in Illinois and was valued at almost 51 million dollars. The tonnage reported for 1960 is a 16 percent increase over the 31.9 million tons reported for 1959. The average value of stone produced in 1960 was $1.38 per ton, compared to the 1959 average value of $1.31. The total value of stone reported for 1959 was 41.7 million dollars.

Illinois counties leading in the production of crushed stone for various purposes are Cook, Will, St. Clair, Kankakee, DuPage, Randolph, Livingston, Vermilion, and Johnson. As a group, these nine counties produced over 25 million tons of stone in 1960, valued at more than 34.5 million dollars. In 1960 these

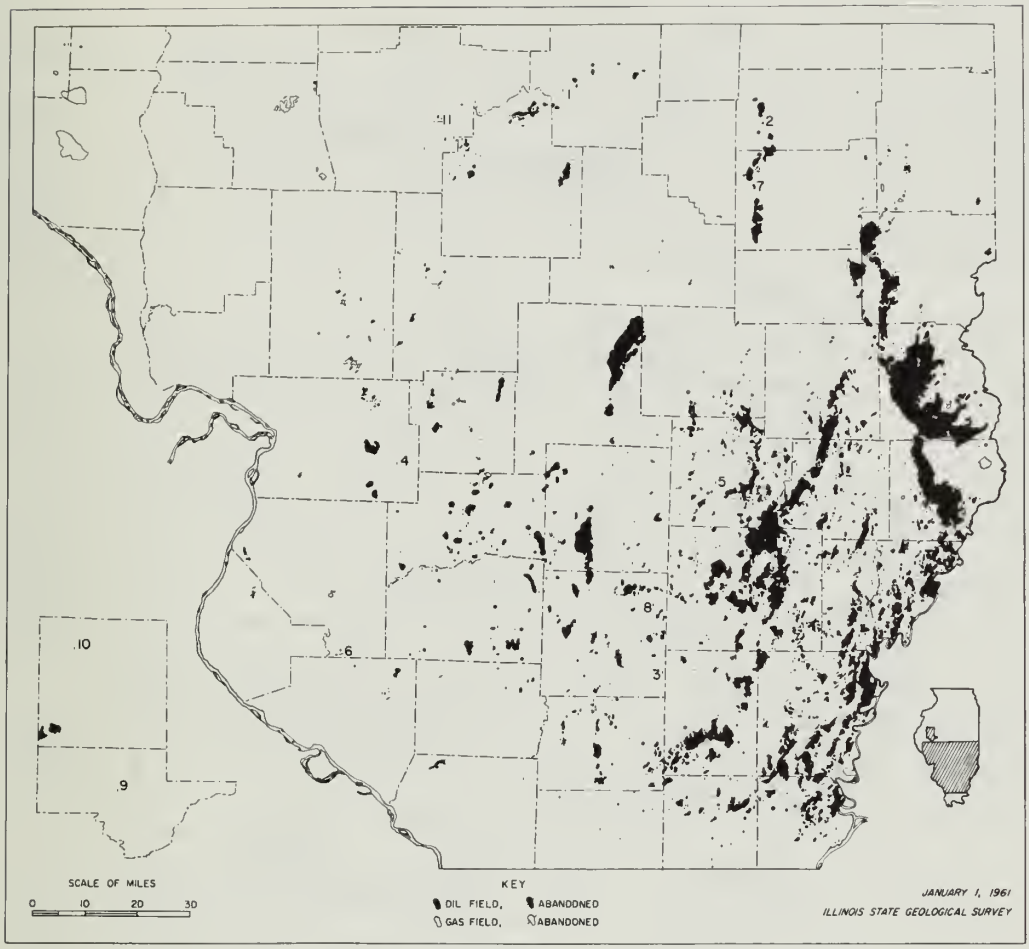

Fig. 7 - Oil and gas pools discovered in Illinois in 1960.

1. Blackland North	Macon County	7. Mattoon North	Coles County
2. Bourbon South	Douglas County	8. Oakdale North	Jefferson County
3. Dahlgren West	Jefferson County	9. Rushville Northwest	Schuyler County
4. Highland	Madison County	10. Sciota	McDonough County
5. Louisville South	Clay County	11. Springfield East	Sangamon County
6. Marissa West (Gas)	St. Clair County		

counties, which make up 16 percent of the 56 counties reporting stone production, quarried about 68 percent of the total tonnage produced. Cook County, the leading stone producing county in the state, produced more than 12.8 million tons, valued at 18.3 million dollars. Union, Rock Island, Carroll, Peoria, Adams, Winnebago, and Madison Counties also produced important quantities of stone in 1960. Together they produced a total of almost 4.9 million tons of crushed stone valued at over 6.8 million dollars. Production figures indicate that the 16 counties in the two groups above produced over 30 million tons of stone, or 81 percent of the 1960

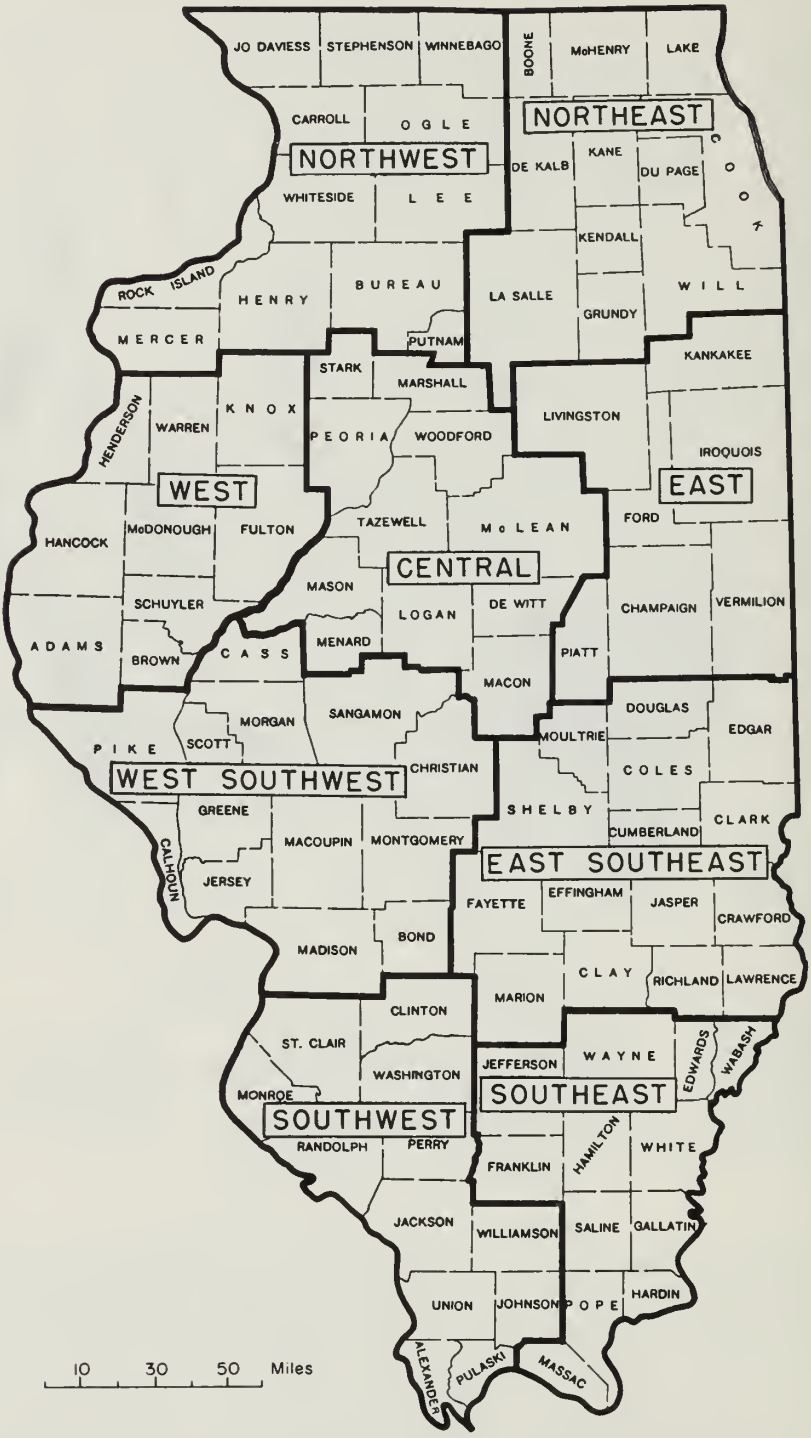

Fig. 8 - County outline map of Illinois showing area division.

state total, while the remaining 40 counties reporting stone production accounted for the other 19 percent.

Crushed limestone and dolomite production in Illinois is summarized in table 13, which shows revised figures for 1959 and final figures for 1960. Reports from producers were unusually complete concerning their 1960 production, enabling a detailed accounting (table 14) of stone production in Illinois according to region (fig. 8) and according to three major categories of use—stone for road and building, agriculture, and all other uses. Table 14 also lists every county reported to have had stone production, as well as the average value at the quarry for all categories of stone in all regions.

The various types of construction that require the use of crushed stone include highway and road building and maintenance, both paved and unpaved surfaces; urban and rural residential construction, including alterations to existing units as well as new units; nonresidential buildings for industry, including factories, office buildings, warehouses, stores, garages, restaurants, and complexes like shopping centers; community buildings such as schools, churches, hospitals and institutions, and recreational structures; public utility construction, including railroad facilities, telephone installations, and electric light and power projects; public construction such as military installations, administrative and service buildings, housing projects, sewer and water systems, and many other developments. In addition to its use in these various kinds of construction, crushed stone has a great many other uses, one of which is agricultural.

Agricultural limestone (agstone) is an important source of calcium for farm soils and, therefore, is an important quarry product. Table 14 gives the 1960 figures on the production of agstone. According to a nation-wide survey conducted by the National Lime Association, in 1960 Illinois led all states in the use of agstone spread on farm lands with a total of 3.1 million tons. The state of Missouri was second with a total of 2.6 million tons used, Ohio was in third place with approximately 2.1 million tons, and Indiana was fourth with 1.7 million tons. Most other states reporting the use of agstone used considerably smaller quantities. Soils supporting increased crop yields that result from the use of commercial fertilizers ultimately will require applications of agricultural limestone to replenish the calcium removed.

TABLE 13 - ILLINOIS LIMESTONE AND DOLOMITE PRODUCTION, 1959-1960[a]

Stone use	1959*		1960	
	Tons	Value	Tons	Value
Road and building	27,162,454	$34,434,383	31,179,165	$42,187,629
Agstone	2,890,431	4,117,564	3,111,654	4,389,253
Metallurgical and chemical	1,282,275	1,856,783	1,760,332	2,400,513
Railroad ballast	138,972	171,905	261,316	300,091
Other	435,010	1,165,830	719,550	1,700,872
Total	31,909,142	$41,746,465	37,032,017	$50,978,358

* Revised figures.

a Excluding stone used in manufacture of cement and lime.

TABLE 14 - ILLINOIS STONE PRODUCTION BY REGIONS, 1960[a,b]

Counties and operations reporting[c]	Crushed and broken stone reported			
	Stone use	Tons	Value	Average per ton
NORTHWEST				
Carroll, Henry, Jo Daviess, Lee, Mercer, Ogle, Rock Island, Stephenson, Whiteside, Winnebago	Road and building	3,277,175	$3,554,732	$1.08
Operations - 36	Agstone	234,131	298,793	1.28
	All other	49,816	38,434	.77
	Total	3,561,122	$3,891,959	$1.09
WEST				
Adams, Brown, Hancock, Henderson, Knox, McDonough, Schuyler, Warren	Road and building	1,397,724	$1,831,082	$1.31
Operations - 20	Agstone	264,926	371,886	1.40
	All other	108,101	447,733	4.14
	Total	1,770,751	$2,650,701	$1.50
WEST SOUTHWEST				
Bond, Calhoun, Christian, Greene, Jersey, Madison, Montgomery, Pike, Scott	Road and building[d]	1,252,029	$1,980,794	$1.58
Operations - 20	Agstone	226,926	354,785	1.56
	All other	-	-	-
	Total	1,478,955	$2,335,579	$1.58
SOUTHWEST				
Clinton, Jackson, Johnson, Monroe, Pulaski, Randolph, St. Clair, Union	Road and building	3,966,046	$6,097,151	$1.54
Operations - 21	Agstone	708,299	917,663	1.30
	All other	1,341,991	1,677,116	1.25
	Total	6,016,336	$8,691,930	$1.44

a Based on U. S. Bureau of Mines figures. All values at the quarry.
b Dimension stone and stone used for cement and lime not included.
c Refer to figure 8.
d Includes small amount of other stone.

TABLE 14 - continued[a,b]

Counties and operations reporting[c]	Crushed and broken stone reported			
	Stone use	Tons	Value	Average per ton
NORTHEAST				
Boone, Cook, DeKalb, DuPage, Kane, Kendall, LaSalle, McHenry, Will	Road and building	16,429,049	$22,211,717	$1.35
	Agstone	352,207	493,198	1.40
	All other	1,166,807	1,898,905	1.63
Operations - 24	Total	17,948,063	$24,603,820	$1.37
EAST				
Kankakee, Livingston, Vermilion	Road and building	3,207,940	$ 4,118,470	$1.28
	Agstone	716,273	942,439	1.32
Operations - 8	All other	74,483	339,288	4.56
	Total	3,998,696	$ 5,400,197	$1.35
CENTRAL				
Menard, Peoria	Road and building	823,247	$ 1,102,202	$1.34
	Agstone	201,691	309,027	1.53
Operations - 5	All other	-	-	-
	Total	1,024,938	$ 1,411,229	$1.38
EAST SOUTHEAST				
Clark, Coles, Effingham, Shelby	Road and building	490,816	$ 729,550	$1.49
	Agstone	330,992	580,459	1.75
	All other	-	-	-
Operations - 8	Total	821,808	$ 1,310,009	$1.59
SOUTHEAST				
Hardin, Jefferson, Massac	Road and building[d]	335,139	$ 561,931	$1.68
	Agstone	76,209	121,003	1.59
	All other	-	-	-
Operations - 4	Total	411,348	$ 682,934	$1.66
STATE TOTALS				
Counties - 56	Road and building	31,179,165	$42,187,629	$1.35
Operations - 146	Agstone	3,111,654	4,389,253	1.41
	All other	2,741,198	4,401,476	1.61
	Total	37,032,017	$50,978,358	$1.38

a Based on U. S. Bureau of Mines figures. All values at the quarry.
b Dimension stone and stone used for cement and lime not included.
c Refer to figure 8.
d Includes small amount of other stone.

TABLE 15 - ILLINOIS COMMON SAND PRODUCTION, 1959-1960[a]

Sand use	1959*		1960	
	Tons	Value	Tons	Value
Road	4,082,498	$3,758,000	6,634,190	$ 6,271,931
Building	6,308,053	5,699,347	4,576,211	3,873,073
Other	586,927	437,974	778,385	488,050
Total	10,977,478	$9,895,321	11,988,786	$10,633,054

* Revised figures.
a Exclusive of silica sand and natural bonded molding sand.

Sand and Gravel

Common sand and gravel, deposited by the glaciers, are found in many places in Illinois. They are used extensively in the construction industry, in building and maintaining highway and railway roadbeds, and for other uses similar to those outlined above for stone. Revised production figures for common sand in 1959 and final figures for 1960 are summarized in table 15. Table 16 gives a detailed review of common sand production in Illinois according to region (fig. 8) and according to use. Tables 17 and 18 and figure 8 give the same information for gravel. Illinois is fortunate in possessing substantial deposits of sand and gravel reasonably accessible to the principal market areas.

TABLE 17 - ILLINOIS GRAVEL PRODUCTION, 1959-1960[a]

Gravel use	1959*		1960	
	Tons	Value	Tons	Value
Road	7,786,411	$ 7,080,193	10,230,894	$ 9,729,342
Building	4,958,106	4,862,510	3,157,700	3,170,476
Railroad ballast	219,125	156,002	163,938	119,525
Other	1,112,025	731,157	1,062,621	675,246
Total	14,075,667	$12,829,862	14,615,153	$13,694,589

* Revised figures.
a Common gravel.

Special Sands

Special sands in Illinois include two sands that have special and important uses in industry. One of these is a natural bonded molding sand that is produced in small quantities each year. In 1960 only 38,900 tons was produced, valued at

TABLE 16 - ILLINOIS COMMON SAND PRODUCTION BY REGIONS, 1960[a]

Counties and operations reporting[b]	Common sand reported			
	Sand use	Tons	Value	Average per ton
NORTHWEST				
Bureau				
Carroll				
Henry				
Jo Daviess				
Lee	Paving	656,813	$ 523,519	$ .80
Ogle	Building	1,022,478	760,792	.74
Rock Island	All other	160,553	85,823	.53
Stephenson	Total	1,839,844	$1,370,134	$ .74
Whiteside				
Winnebago				
Operations - 20				
WEST				
Adams	Paving	-	$ -	$ -
Brown	Building	-	-	-
Fulton	All other	-	-	-
Operations - 4	Total[c]	125,236	$ 130,186	$1.04
WEST SOUTHWEST				
Bond				
Calhoun	Paving	266,203	$ 213,191	$ .80
Madison	Building	427,125	419,476	.98
Pike	All other	18,660	15,766	.84
Sangamon	Total	711,988	$ 648,433	$ .91
Scott				
Operations - 11				
SOUTHWEST				
Alexander	Paving	208,100	$ 161,015	$ .77
Jackson	Building	319,000	304,800	.96
Randolph	All other	51,700	46,920	.91
St. Clair	Total	578,800	$ 512,735	$ .89
Operations - 4				
CENTRAL				
Logan				
McLean	Paving	594,862	$ 627,300	$1.05
Macon	Building	646,273	721,375	1.12
Mason	All other	162,618	110,363	.68
Peoria	Total	1,403,753	$1,459,038	$1.04
Tazewell				
Operations - 15				

a Based on U. S. Bureau of Mines figures. All values at the pit.
b Refer to figure 8.
c Total for region - fewer than three producers for each use.

TABLE 16 - continued[a]

Counties and operations reporting[b]	Common sand reported			
	Sand use	Tons	Value	Average per ton
NORTHEAST				
Boone				
Cook				
DeKalb				
DuPage				
Grundy	Paving	4,583,108	$ 4,467,581	$ .97
Kane	Building	1,866,880	1,381,973	.74
Kendall	All other	197,999	126,775	.64
Lake	Total	6,647,987	$ 5,976,329	$ .90
LaSalle				
McHenry				
Will				
Operations - 35				
EAST				
Champaign	Paving	99,189	$ 89,702	$ .90
Ford	Building	95,963	94,900	.99
Kankakee	All other	129,735	63,236	.49
Vermilion	Total	324,887	$ 247,838	$ .76
Operations - 6				
EAST SOUTHEAST				
Clark				
Coles	Paving	154,304	$ 125,512	$ .81
Cumberland	Building	49,624	42,629	.86
Fayette	All other	16,253	11,401	.70
Lawrence	Total	220,181	$ 179,542	$ .82
Operations - 9				
SOUTHEAST				
Edwards	Paving	-	$ -	$ -
Wabash	Building[c]	108,268	93,268	.86
White	All other	27,842	15,551	.56
Operations - 6	Total	136,110	$ 108,819	$ .80
STATE TOTALS				
Counties - 52	Paving	6,634,190	$ 6,271,931	$ .95
Operations - 110	Building	4,576,211	3,873,073	.85
	All other	778,385	488,050	.63
	Total	11,988,786	$10,633,054	$ .89

a Based on U. S. Bureau of Mines figures. All values at the pit.
b Refer to figure 8.
c Includes paving sand.

TABLE 18 - ILLINOIS GRAVEL PRODUCTION BY REGIONS, 1960[a]

Counties and operations reporting[b]	Common gravel reported			
	Gravel use	Tons	Value	Average per ton
NORTHWEST				
Bureau				
Carroll				
Henry				
Jo Daviess	Paving	805,717	$ 792,457	$ .98
Lee	Building	704,493	753,059	1.07
Ogle	All other	72,290	81,524	1.13
Rock Island	Total	1,582,500	$1,627,040	$1.03
Stephenson				
Whiteside				
Winnebago				
Operations - 24				
WEST				
Adams	Paving	-	$ -	$ -
Brown	Building	-	-	-
Fulton	All other	-	-	-
Operations - 3	Total[c]	328,742	$ 422,973	$1.29
WEST SOUTHWEST				
Bond	Paving	120,947	$ 139,316	$1.15
Pike	Building	49,476	67,096	1.36
Sangamon	All other[d]	154,891	86,135	.56
Operations - 7	Total	325,314	$ 292,547	$ .90
SOUTHWEST				
Alexander	Paving	-	$ -	$ -
Jackson	Building	-	-	-
Operations - 2	All other	-	-	-
	Total[d]	-	$ -	$ -
CENTRAL				
Logan				
McLean				
Macon	Paving	1,798,135	$1,937,188	$1.08
Marshall	Building	344,818	435,836	1.26
Peoria	All other	146,237	126,214	.86
Tazewell	Total	2,289,190	$2,499,238	$1.09
Woodford				
Operations - 17				

a Based on U. S. Bureau of Mines figures. All values at the pit.
b Refer to figure 8.
c Total for region—fewer than three producers for each use.
d Small amounts of paving and building gravel from Southwest Region included with other gravel in West Southwest Region.

TABLE 18 - continued[a]

Counties and operations reporting[b]	Common gravel reported			
	Gravel use	Tons	Value	Average per ton
NORTHEAST				
Boone				
Cook				
DeKalb				
DuPage	Paving	6,655,416	$ 5,981,192	$ .90
Kane	Building	1,846,097	1,603,675	.87
Kendall	All other	615,814	321,860	.52
Lake	Total	9,117,327	$ 7,906,727	$ .87
LaSalle				
McHenry				
Will				
Operations - 49				
EAST				
Champaign	Paving	86,355	$ 84,730	$ .98
Ford	Building	29,489	50,030	1.70
Vermilion	All other	39,085	38,656	.99
Operations - 9	Total	154,929	$ 173,416	$1.12
EAST SOUTHEAST				
Clark				
Coles	Paving	270,941	$ 253,356	$ .94
Cumberland	Building	55,622	81,604	1.47
Fayette	All other	132,848	73,684	.55
Lawrence	Total	459,411	$ 408,644	$ .89
Operations - 10				
SOUTHEAST				
Edwards				
Pope	Paving	277,141	$ 282,390	$1.02
Wabash	Building	25,705	26,676	1.04
White	All other	54,894	54,938	1.00
Operations - 8	Total	357,740	$ 364,004	$1.02
STATE TOTALS				
Counties - 47	Paving	10,230,894	$ 9,729,342	$ .95
Operations - 129	Building	3,157,700	3,170,476	1.00
	All other	1,226,559	794,771	.65
	Total	14,615,153	$13,694,589	$ .94

a Based on U. S. Bureau of Mines figures. All values at the pit.
b Refer to figure 8.

about $80,000 (table 19). Natural bonded molding sand can be used in molds for the casting of metals without the addition of a binding substance, such as clay, because the sand already contains the proportion of fine clay to permit molding use.

TABLE 19 - SPECIAL SANDS IN ILLINOIS, 1959-1960

Uses	1959*		1960	
	Tons	Value	Tons	Value
Silica sand				
Glass sand	1,453,462	$ 3,322,289	1,343,578	$3,305,897
Molding sand	669,502	1,800,034	497,708	1,593,005
Other uses[a]	580,827	2,737,820	523,114	2,363,072
Ground silica[b]	233,374	2,499,658	200,864	2,476,096
Total silica sand	-	$10,359,801	-	$9,738,070
Natural bonded molding sand	19,436	36,575	38,893	80,040
Total special sands	-	$10,396,376	-	$9,818,110

* Revised figures.
a Grinding and polishing, blast, fire and furnace, engine, filter.
b For abrasives, ceramics, foundry, and filler from ground siliceous material.

The other special sand of Illinois is silica sand. This mineral, which is produced in substantial quantities in LaSalle County and in lesser amounts in Ogle County, is a nearly pure quartz (a natural form of silica) sand. During 1960 about 2.5 million tons of silica sand was produced for various uses and was valued at more than 9.7 million dollars (table 19). According to 1960 production figures, the largest individual use for Illinois silica sand was in the manufacture of glass. The usual types of glass are made by melting a mixture of chemicals containing about two-thirds silica sand. The second most important use for the state's silica sand was for molding sand purposes. Silica sand, when tempered by the addition of clay or other binding material, makes an excellent molding sand because it can withstand the great heat of metal casting.

CLAY PRODUCTS

The manufacture of Illinois clay products reported for 1960 amounted to more than 56.6 million dollars. Although this amount was 1.7 million dollars below the 58.3 million dollar value reported in 1959, it represents a very productive year for the industry. Clay products include such items as face brick and common brick, sewer pipe and drain tile, flue pipe, building tile, vitreous plumbing fixtures, glazed tile, electrical porcelains, and pottery and whiteware. Also included in the list of Illinois clay products are the various forms of special heat-resistant

fire brick and silica brick used by the metallurgical industries. Table 20 summarizes the production of clay products for the years 1959 and 1960. Table 21 lists, by county, the number of clay products plants in Illinois reporting production for 1960. The county outline map of Illinois (fig. 8) shows the nine sections of the state used in tabulating this list of plants.

CEMENT

The manufacture of cement is the fifth largest mineral industry in value of product in Illinois. Two counties possess the state's present four cement manufacturing plants; two are located at Oglesby and one at LaSalle in LaSalle County, and one at Dixon in Lee County. Figures in table 1 show that Illinois shipped a total of more than 9.1 million barrels of all types of cement in 1960, valued at more than 30.7 million dollars.

Because the industry is highly competitive, the success of a plant depends upon the market outlet obtainable for its product when the plant is operating at or near capacity. Because transportation is an important element in the delivered cost of cement, the continued successful operation of a plant depends upon a large market potential in its vicinity and upon available low-cost transportation facilities. The Illinois cement industry, located in the north-central part of the state, is near a substantial market area and has available to it both rail and water transportation systems.

FLUORSPAR

Final figures for 1960 indicate that Illinois produced and shipped 134,529 tons of finished fluorspar, which was 58.5 percent of the 229,782 tons of finished fluorspar produced and shipped in the United States. During 1960, fluorspar imported for consumption in the United States amounted to 534,020 tons, and the total consumed amounted to 643,759 tons. Illinois supplied about 21 percent of all fluorspar (domestic and foreign) consumed in the United States.

Fluorspar is an important raw material for the iron and steel, aluminum, chemical, glass, and ceramics industries. Commercial fluorspar is graded principally according to its content of calcium fluoride and is prepared ordinarily as metallurgical grade, acid grade, and ceramic grade.

The mineral fluorite, commonly called fluorspar, is glassy in appearance, fairly heavy, and brittle. It is transparent or translucent and commonly ranges in color from green to white, but also occurs in other hues. Crystallization usually takes the form of cubes.

In recent years the increased use of acid grade fluorspar by the aluminum and chemical industries for the manufacture of hydrofluoric acid has put this use of fluorspar in first place. According to a report by the U. S. Bureau of Mines, 372,654 tons of fluorspar was used in the manufacture of hydrofluoric acid during 1960. Hydrofluoric acid is used in the manufacture of aluminum fluoride and synthetic cryolite, both needed in the manufacture of aluminum. In the chemical industry, hydrofluoric acid is used primarily as an intermediate in the manufacture of fluorine compounds. In 1960 a total of 379,576 tons of acid grade fluorspar was consumed in the United States.

TABLE 20 - PRODUCTION OF ILLINOIS CLAY PRODUCTS, 1959-1960

Clay products reported	1959*		1960	
	Amount	Value	Amount	Value
Face brick	241,589,980	$10,519,132	172,574,731	$ 6,944,093
Common brick	259,543,463	7,398,182	222,404,910	6,178,088
Structural tile (tons)	35,079	372,224	26,784	296,224
Drain and sewer tile (tons)	160,977	4,135,277	157,421	4,720,295
Other structural products	-	1,375,152	-	3,208,500
Clay and silica refractories	-	11,197,877	-	11,284,009
Pottery and whiteware	-	23,346,077	-	23,989,856
Total		$58,343,921		$56,621,065

* Revised figures.

TABLE 21 - ILLINOIS CLAY PRODUCT PLANTS REPORTING PRODUCTION BY COUNTIES AND REGIONS, 1960

County[a]	Plants Reporting
NORTHWEST	
Bureau Mercer Rock Island	3
WEST	
Brown Knox McDonough Warren	8
WEST SOUTHWEST	
Greene Madison Sangamon Scott	8
SOUTHWEST	
St. Clair Pulaski	3
CENTRAL	
Logan Marshall Menard Tazewell	5
NORTHEAST	
Cook Grundy Kane Lake LaSalle McHenry Will	24
EAST	
Kankakee Livingston Vermilion	6
EAST SOUTHEAST	
Crawford Fayette	2
SOUTHEAST	
Edwards	1
STATE TOTALS	
Counties reporting	30
Plants reporting	60

a Refer to figure 8.

The steel industry, formerly the dominant consumer of fluorspar, uses it as a flux in the production of basic open-hearth steel, electric furnace steel, ferro-alloys and alloy steel, and Bessemer steel; iron foundries also use it. The U. S. Bureau of Mines reports that a total of 229,929 tons of metallurgical grade fluorspar was consumed in the United States in 1960.

Ceramic grade fluorspar is used principally in the manufacture of opal, opaque, and colored glass, and to make colored enamels for coating metal and metalware and ceramic tile. A total of 34,254 tons of ceramic grade fluorspar was consumed in 1960, according to the U. S. Bureau of Mines.

TABLE 22 - FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES AND IMPORTS IN 1960[a]

State	1960		Percent of United States	
	Tons	Value	Total tons	Total value
Illinois	134,529	$ 6,935,511	58.5	66.8
Kentucky	25,855	1,172,815	11.3	11.3
Montana	31,273	b	13.6	-
Nevada	18,505	387,842	8.1	3.7
Utah	1,912	51,152	0.8	0.5
Other states	17,708	1,842,845	7.7	17.7
Total 1960	229,782	$10,390,165	100.0	100.0
Total 1959	185,091	$ 8,680,151		
Imports for use in the United States				
Total 1960	534,019	$14,392,888		
Total 1959	555,750	$13,368,272		

a Source: U. S. Bureau of Mines.
b Montana fluorspar value included with other states.

Table 22, which indicates the amount of fluorspar shipped from mines in the United States in 1960, shows that Illinois was the foremost producer of this mineral in the country. Table 23, which lists the more important fluorspar consuming areas of the country, shows that Illinois is also a large consumer of fluorspar.

METALS

Final figures for 1960 indicate that mine output of zinc in Illinois amounted to 29,550 tons and was valued at more than 7.6 million dollars. Illinois lead production totaled 3,000 tons, with a value of $702,000 for 1960. No silver was reported for 1960, the fourth consecutive year that this metal has not been produced from Illinois mining operations (table 24).

TABLE 23 - FLUORSPAR (DOMESTIC AND FOREIGN) CONSUMED IN THE UNITED STATES, 1959-1960[a]

States	Tons consumed 1959	Tons consumed 1960	Percent of 1960 total consumed
Delaware and New Jersey	84,240	101,117	15.7
Illinois	97,871	95,527	14.8
Arkansas, Kansas, Louisiana, Oklahoma	76,448	81,322	12.6
Ohio	69,644	66,280	10.3
Pennsylvania	66,157	63,232	9.8
West Virginia	21,205	37,275	5.8
Kentucky	35,187	33,691	5.2
Texas	23,329	31,561	4.9
Michigan	19,867	29,762	4.6
Indiana	22,685	24,181	3.8
Other states	73,346	79,811	12.5
Total	589,979	643,759	100.0

a Source: U. S. Bureau of Mines.

Zinc and lead are produced in Illinois from primary metal mines in Jo Daviess County located in the northwestern part of the state, and as by-products of fluorspar mining in Hardin and Pope Counties in southern Illinois. Northern Illinois mines produced 20,325 tons of zinc and 1,245 tons of lead during 1960, while southern Illinois mines recovered 9,225 tons of zinc and 1,755 tons of lead.

TABLE 24 - ILLINOIS ZINC, LEAD, AND SILVER PRODUCTION, 1951-1960[a]

Year[b]	Zinc Tons	Zinc Value	Lead Tons	Lead Value	Silver Ounces	Silver Value
1951	21,776	$7,926,464	3,160	$1,093,360	3,465	$3,136
1952	18,816	6,246,912	4,262	1,372,364	3,781	3,422
1953	14,556	3,347,880	3,391	888,442	2,338	2,116
1954	14,427	3,116,232	3,232	885,568	1,160	1,050
1955	21,700	5,338,200	4,544	1,354,112	3,075	2,783
1956	24,039	6,586,686	3,832	1,203,248	1,580	1,430
1957	22,185	5,146,920	2,970	849,420	-	-
1958	24,940	5,087,760	1,610	376,740	-	-
1959*	26,815	6,167,450	2,570	591,100	-	-
1960	29,550	7,623,900	3,000	702,000	-	-

* Revised figures.
a Mine production of recoverable metal.
b Source: U. S. Bureau of Mines.

SUMMARY OF MINERALS PRODUCED BY ILLINOIS COUNTIES, 1960

Table 25 of this report was designed as a quick and convenient reference to the counties in Illinois producing any of the 13 major mineral products of this state. The table also indicates the number of different mineral products produced by any county in the state. Production of a commodity is indicated by an X.

TABLE 25 - SUMMARY OF MINERALS PRODUCED BY ILLINOIS COUNTIES, 1960

Counties	Cement	Clay products	Coal	Crude oil	Fluorspar	Lead	Lime	Natural bonded molding sand	Sand and gravel (common)	Silica sand	Stone	Tripoli	Zinc
Adams	-	-	X	X	-	-	X	-	X	-	X	-	-
Alexander	-	-	-	-	-	-	-	-	X	-	-	X	-
Bond	-	-	-	X	-	-	-	-	X	-	X	-	-
Boone	-	-	-	-	-	-	-	-	X	-	X	-	-
Brown	-	X	X	X	-	-	-	-	X	-	X	-	-
Bureau	-	X	X	-	-	-	-	X	X	-	-	-	-
Calhoun	-	-	-	-	-	-	-	-	X	-	X	-	-
Carroll	-	-	-	-	-	-	-	X	X	-	X	-	-
Cass	-	-	-	-	-	-	-	-	-	-	-	-	-
Champaign	-	-	-	-	-	-	-	-	X	-	-	-	-
Christian	-	-	X	X	-	-	-	-	-	-	X	-	-
Clark	-	-	-	X	-	-	-	-	X	-	X	-	-
Clay	-	-	-	X	-	-	-	-	-	-	-	-	-
Clinton	-	-	X	X	-	-	-	-	-	-	X	-	-
Coles	-	-	-	X	-	-	-	-	X	-	X	-	-
Cook	-	X	-	-	-	-	X	-	X	-	X	-	-
Crawford	-	X	X	X	-	-	-	-	-	-	-	-	-
Cumberland	-	-	-	X	-	-	-	-	X	-	-	-	-
Dekalb	-	-	-	-	-	-	-	-	X	-	X	-	-
Dewitt	-	-	-	-	-	-	-	-	-	-	-	-	-
Douglas	-	-	X	X	-	-	-	-	-	-	-	-	-
DuPage	-	-	-	-	-	-	-	-	X	-	X	-	-
Edgar	-	-	-	X	-	-	-	-	-	-	-	-	-
Edwards	-	X	-	X	-	-	-	-	X	-	-	-	-
Effingham	-	-	-	X	-	-	-	-	-	-	X	-	-
Fayette	-	X	-	X	-	-	-	X	X	-	-	-	-
Ford	-	-	-	-	-	-	-	-	X	-	-	-	-
Franklin	-	-	X	X	-	-	-	-	-	-	-	-	-
Fulton	-	-	X	-	-	-	-	-	X	-	-	-	-
Gallatin	-	-	X	X	-	-	-	-	-	-	-	-	-

TABLE 25 - continued

Counties	Cement	Clay products	Coal	Crude oil	Fluorspar	Lead	Lime	Natural bonded molding sand	Sand and gravel (common)	Silica sand	Stone	Tripoli	Zinc
Greene	-	X	X	-	-	-	-	-	-	-	X	-	-
Grundy	-	X	-	-	-	-	-	-	X	-	-	-	-
Hamilton	-	-	-	X	-	-	-	-	-	-	-	-	-
Hancock	-	-	-	X	-	-	-	-	-	-	X	-	-
Hardin	-	-	-	-	X	X	-	-	-	-	X	-	X
Henderson	-	-	-	-	-	-	-	-	-	-	X	-	-
Henry	-	-	X	-	-	-	-	-	X	-	X	-	-
Iroquois	-	-	-	-	-	-	-	-	-	-	-	-	-
Jackson	-	-	X	-	-	-	-	-	X	-	X	-	-
Jasper	-	-	-	X	-	-	-	-	-	-	-	-	-
Jefferson	-	-	X	X	-	-	-	-	-	-	X	-	-
Jersey	-	-	-	-	-	-	-	-	-	-	X	-	-
Jo Daviess	-	-	-	-	-	X	-	-	X	-	X	-	X
Johnson	-	-	-	-	-	-	-	-	-	-	X	-	-
Kane	-	X	-	-	-	-	-	-	X	-	X	-	-
Kankakee	-	X	X	-	-	-	-	X	X	-	X	-	-
Kendall	-	-	-	-	-	-	-	-	X	-	X	-	-
Knox	-	X	X	-	-	-	-	-	-	-	X	-	-
Lake	-	X	-	-	-	-	-	-	X	-	-	-	-
LaSalle	X	X	X	-	-	-	-	-	X	X	X	-	-
Lawrence	-	-	-	X	-	-	-	-	X	-	-	-	-
Lee	X	-	-	-	-	-	-	-	X	-	X	-	-
Livingston	-	X	X	-	-	-	-	-	-	-	X	-	-
Logan	-	X	X	-	-	-	-	-	X	-	-	-	-
McDonough	-	X	-	X	-	-	-	-	-	-	X	-	-
McHenry	-	X	-	-	-	-	-	-	X	-	X	-	-
McLean	-	-	-	-	-	-	-	-	X	-	-	-	-
Macon	-	-	-	X	-	-	-	-	X	-	-	-	-
Macoupin	-	-	X	X	-	-	-	-	-	-	-	-	-
Madison	-	X	X	X	-	-	-	-	X	-	X	-	-
Marion	-	-	X	X	-	-	-	-	-	-	-	-	-
Marshall	-	X	-	-	-	-	-	-	X	-	-	-	-
Mason	-	-	-	-	-	-	-	-	X	-	-	-	-
Massac	-	-	-	-	-	-	-	-	-	-	X	-	-
Menard	-	X	X	-	-	-	-	-	-	-	X	-	-
Mercer	-	X	X	-	-	-	-	-	-	-	X	-	-

TABLE 25 - continued

Counties	Cement	Clay products	Coal	Crude oil	Fluorspar	Lead	Lime	Natural bonded molding sand	Sand and gravel (common)	Silica sand	Stone	Tripoli	Zinc
Monroe	-	-	-	-	-	-	-	-	-	-	X	-	-
Montgomery	-	-	X	X	-	-	-	-	-	-	X	-	-
Morgan	-	-	-	-	-	-	-	-	-	-	-	-	-
Moultrie	-	-	-	X	-	-	-	-	-	-	-	-	-
Ogle	-	-	-	-	-	-	-	-	X	X	X	-	-
Peoria	-	-	X	-	-	-	-	-	X	-	X	-	-
Perry	-	-	X	X	-	-	-	-	-	-	-	-	-
Piatt	-	-	-	-	-	-	-	-	-	-	-	-	-
Pike	-	-	-	-	-	-	-	-	X	-	X	-	-
Pope	-	-	-	-	X	X	-	-	X	-	-	-	X
Pulaski	-	X	-	-	-	-	-	-	-	-	X	-	-
Putnam	-	-	-	-	-	-	-	-	-	-	-	-	-
Randolph	-	-	X	X	-	-	-	-	X	-	X	-	-
Richland	-	-	-	X	-	-	-	-	-	-	-	-	-
Rock Island	-	X	-	-	-	-	-	-	X	-	X	-	-
St. Clair	-	X	X	X	-	-	-	-	X	-	X	-	-
Saline	-	-	X	X	-	-	-	-	-	-	-	-	-
Sangamon	-	X	X	X	-	-	-	-	X	-	-	-	-
Schuyler	-	-	X	X	-	-	-	-	-	-	X	-	-
Scott	-	X	-	-	-	-	-	-	X	-	X	-	-
Shelby	-	-	-	X	-	-	-	-	-	-	X	-	-
Stark	-	-	X	-	-	-	-	-	-	-	-	-	-
Stephenson	-	-	-	-	-	-	-	-	X	-	X	-	-
Tazewell	-	X	-	-	-	-	-	-	X	-	-	-	-
Union	-	-	-	-	-	-	-	-	-	-	X	-	-
Vermilion	-	X	X	-	-	-	-	-	X	-	X	-	-
Wabash	-	-	X	X	-	-	-	-	X	-	-	-	-
Warren	-	X	-	-	-	-	-	-	-	-	X	-	-
Washington	-	-	X	X	-	-	-	-	-	-	-	-	-
Wayne	-	-	-	X	-	-	-	-	-	-	-	-	-
White	-	-	-	X	-	-	-	-	X	-	-	-	-
Whiteside	-	-	-	-	-	-	-	-	X	-	X	-	-
Will	-	X	X	-	-	-	-	-	X	-	X	-	-
Williamson	-	-	X	X	-	-	-	-	-	-	-	-	-
Winnebago	-	-	-	-	-	-	-	-	X	-	X	-	-
Woodford	-	-	-	-	-	-	-	-	X	-	-	-	-

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